FILE D

Mathematics:
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Mathematics

Item Information and Scoring Guide Reference Sheet, and Quantities of Items by Type

Item Information and Scoring Guide Reference Sheet

The following pages are designed to assist you in understanding how Maine Educational Assessment (MEA) items are scored. These pages contain the text for each item accompanied by the following information.

- **MC#:** the multiple-choice item position
- **Key:** the letter of the correct answer for the multiple-choice item
- **Learning Results:** the content standard, followed by the performance indicator, that the item measured

- **SA#:** the short-answer item position
- **Learning Results:** the content standard, followed by the performance indicator, that the item measured
- **Short-Answer Scoring Guide:** the two-point description used to determine the score
- **Training Notes:** in-depth descriptions or particular information used to determine the score

- **CR#:** the constructed-response item position
- **Learning Results:** the content standard, followed by the performance indicator, that the item measured
- **Constructed-Response Scoring Guide:** the four-point description used to determine the score
- **Training Notes:** in-depth descriptions or particular information used to determine the score

MAINE 2001–2002

Mathematics Grade 4

The table below shows the quantities of released items for each item type. Item information for all item types and scoring information (guides and training notes) for all short-answer and constructed-response items follow.

QUANTITIES OF ITEMS BY TYPE

MC	SA	CR
20	5	4

Items with Keys, Learning Results, Scoring Guides, Training Notes, and Student Responses

1. The students are making apple crisp. They need to cut up $11\frac{1}{2}$ cups of apples. So far, they have cut up 8 cups. How much more do they need to cut up?

   A. 3 cups

   B. $3\frac{1}{2}$ cups

   C. 17 cups

   D. $19\frac{1}{2}$ cups

MC#: 1
Key: B
Learning Results: B-2
Computation
B2 Students will understand and demonstrate computation skills. Students will be able to solve real-life problems involving addition and subtraction of simple fractions.

2. Which number is 20 thousand more than 582,375?

A. 582,395
B. 582,575
C. 584,375
D. 602,375

MC#: 2
Key: D
Learning Results: A-1
Numbers and Number Sense

A Students will understand and demonstrate a sense of what numbers mean and how they are used. Students will be able to

1 read, compare, order, classify, and explain whole numbers up to one million.

3. Alex's family is going to the Grand Canyon for summer vacation. They will be gone a total of 3 weeks. It takes 6 days to drive to the canyon, one way. How long will they be able to stay at the Grand Canyon before they need to leave to drive home?

A. 7 days
B. 8 days
C. 9 days
D. 10 days

MC#: 3
Key: C
Learning Results: B-1
Computation
B Students will understand and demonstrate computation skills. Students will be able to
1 solve multi-step, real-life problems using the four operations with whole numbers.

4. Brendon put the pennies he had been saving into rolls, with 50 pennies in each roll. He took 7 rolls to the bank. How much money did he take to the bank?

A. $2.50
B. $3.00
C. $3.50
D. $4.00

MC#: 4
Key: C
Learning Results: B-4
Computation
B 4 Students will understand and demonstrate computation skills. Students will be able to develop proficiency with the facts and algorithms of the four operations on whole numbers using mental math and a variety of materials, strategies, and technologies.

5. Which number is closest to 19 × 11?

A. 100
B. 200
C. 300
D. 400

MC#: 5
Key: B
Learning Results: B-4
Computation
B 4 Students will understand and demonstrate computation skills. Students will be able to develop proficiency with the facts and algorithms of the four operations on whole numbers using mental math and a variety of materials, strategies, and technologies.

6. Which girl hit the ball MORE than $\frac{1}{2}$ of her times at bat?

   A. Suzanne hit the ball 5 times out of 8 times at bat.

   B. Samantha hit the ball 2 times out of 5 times at bat.

   C. Jan hit the ball 2 times out of 6 times at bat.

   D. Karen hit the ball 7 times out of 15 times at bat.

MC#: 6
Key: A
Learning Results: A-2
Numbers and Number Sense
A Students will understand and demonstrate a sense of what numbers mean and how they are used. Students will be able to
2 read, compare, order, classify, and explain simple fractions through tenths.

10. The 87 fourth-grade students in Gayle School are going on an all-day field trip.
    a. The cost for each student is $8. What is the total cost for all 87 students?
    b. The students will go in vans. Each van can take 6 students. How many vans will be needed to take all 87 students?

SA#: 10
Learning Results: B-4
Computation
B 4 Students will understand and demonstrate computation skills. Students will be able to develop proficiency with the facts and algorithms of the four operations on whole numbers using mental math and a variety of materials, strategies, and technologies.

SHORT-ANSWER SCORING GUIDE

Score	Description
2	Student correctly answers both parts a and b.
1	Student correctly answers either part a or part b.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes for Short-Answer #10

Correct answers:
Part a: $696
Part b: 15

Student Responses for Short-Answer #10 for Score Points 2 and 1

Score Point: 2

10a.

$800
× 87
$5600
$6400
$696,00

answer: $69600

b.

15
6)87
60
27
24
3
1 0
4
1
15

answer: 15

Score Point: 2

10a.

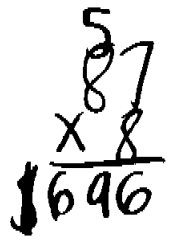
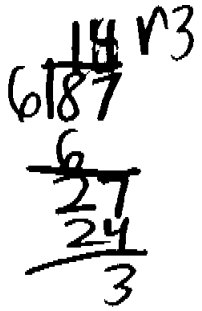
87 students
× $8 each
$696 dollars

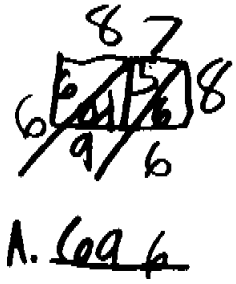
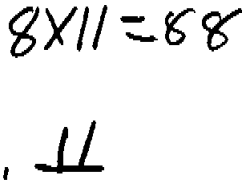
$696 dollars

b.

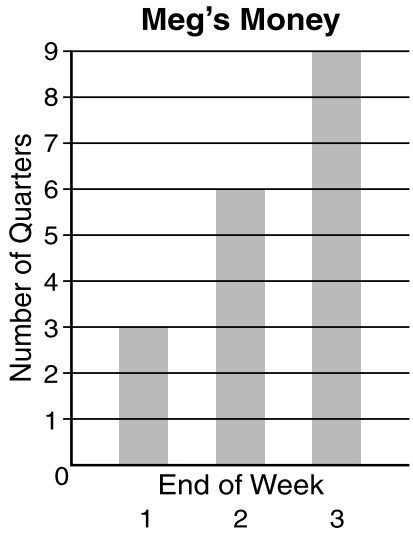
14 R3
6)87
−6
27
−24
03

15 vans

10a.	b. 1
	

10a.	b. 1
	

11. The graph below shows the number of quarters in Meg's piggy bank at the end of each week.



a. What is the VALUE of Meg's quarters at the end of Week 3?

b. If she continues to save at the same rate, HOW MANY quarters will be in her bank at the end of Week 5?

SA#: 11
Learning Results: C-1
Data Analysis and Statistics
C Students will understand and apply concepts of data analysis. Students will be able to
1 make generalizations and draw conclusions using various types of graphs, charts, and tables.

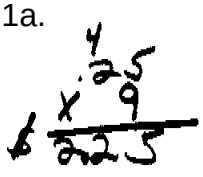
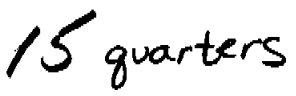
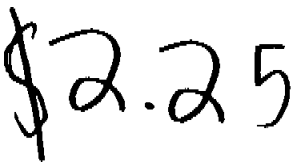
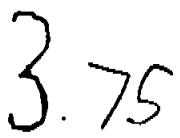
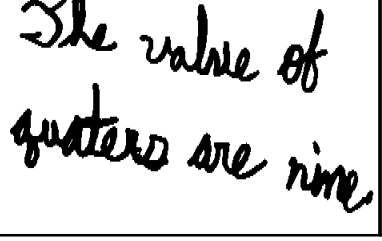
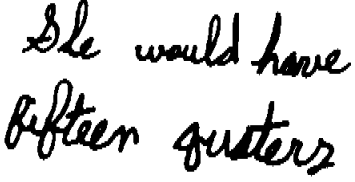
SHORT-ANSWER SCORING GUIDE

Score	Description
2	Student correctly answers both parts a and b.
1	Student correctly answers either part a or part b.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes for Short-Answer #11

Correct answers:
Part a: $2.25
Part b: 15 quarters (or $3.75)

Student Responses for Short-Answer #11 for Score Points 2 and 1

11a. 	b. **2** 
11a. 	b. **2** 
11a. 	b. **1** 
11a. 	b. **1** 

$6 \times \square = \triangle$

12. In this number sentence, $\square$ stands for any one of the numbers 0, 1, 2, 3, 4, 5, or 6.

    Complete the table in your Student Response Booklet to show what the value of $\triangle$ will be for each of the values of $\square$.

SA#: 12
Learning Results: H-1
Algebra Concepts
H Students will understand and apply algebraic concepts. Students will be able to
1 develop and evaluate simple formulas in problem-solving contexts.

SHORT-ANSWER SCORING GUIDE

Score	Description
2	Student correctly provides all seven values (0, 6, 12, 18, 24, 30, and 36).
1	Student correctly provides five or six values (out of 0, 6, 12, 18, 24, 30, and 36).
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Student Responses for Short-Answer #12 for Score Points 2 and 1

2

12.

□	0	1	2	3	4	5	6
△	0	6	12	18	24	30	36

2

12. 6 x 6 = 36

□	0	1	2	3	4	5	6
△	0	6	12	18	24	30	36

1

12.

□	0	1	2	3	4	5	6
△	0	6	12	18	24	28	34

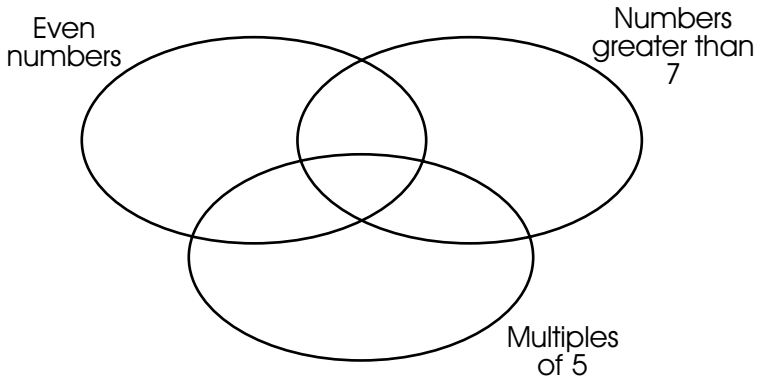
1

12.

□	0	1	2	3	4	5	6
△	0	6	12	21	18	30	36

13. Write each of the following numbers into the correct section of the Venn diagram in your Student Response Booklet.

2 15 20 27



SA#: 13
Learning Results: I-1
Discrete Mathematics
I 1 Students will understand and apply concepts in discrete mathematics. Students will be able to create and use organized lists, tree diagrams, Venn diagrams, and networks.

SHORT-ANSWER SCORING GUIDE

Score	Description
2	Student correctly positions all four numbers.
1	Student correctly positions three of the four numbers. OR Student positions 2 and 20 somewhere in the even numbers circle and 15 and 27 outside the even numbers circle.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

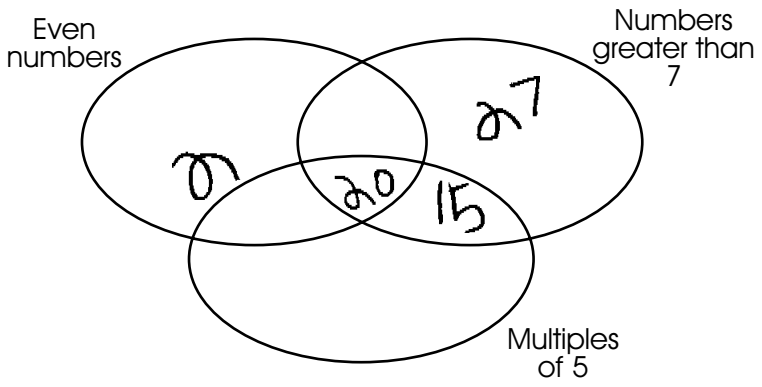
Training Notes for Short-Answer #13

Note: No credit for overlap of numbers (same number placed in more than one spot).

Student Responses for Short-Answer #13 for Score Points 2 and 1

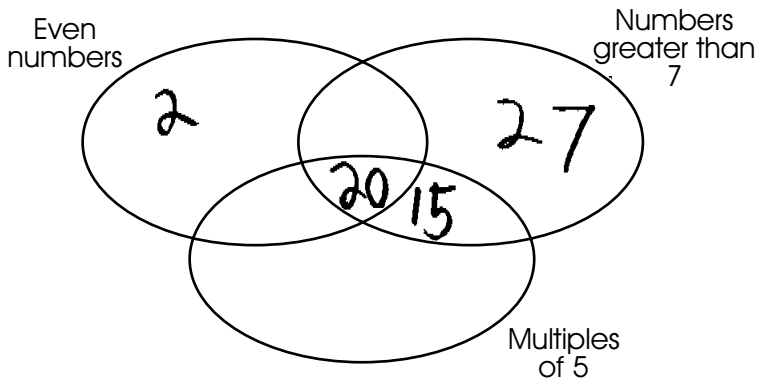
13.

2



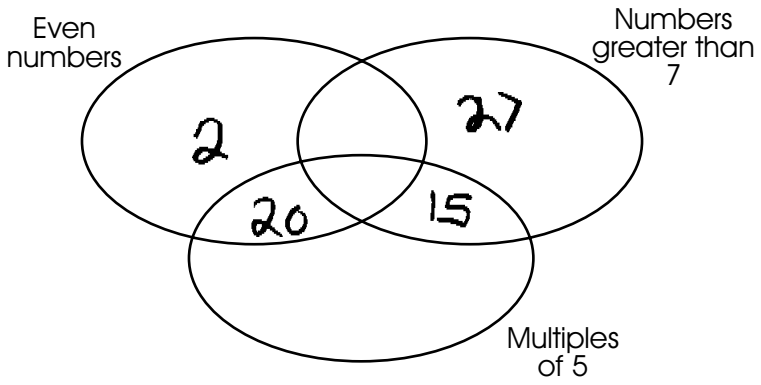
13.

2



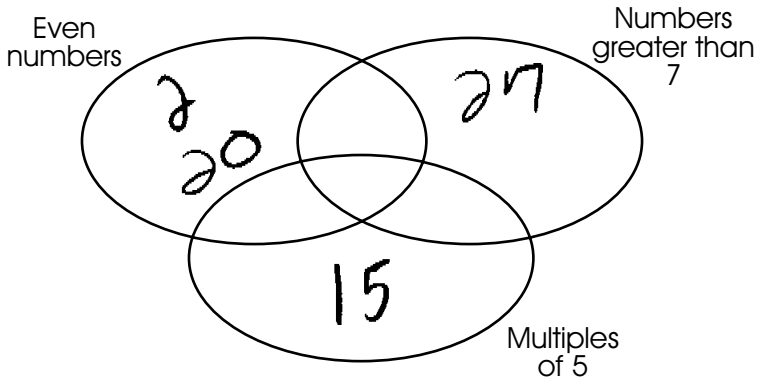
13.

1


Even numbers
Numbers greater than 7
Multiples of 5
2
27
20
15

13.

1


Even numbers
Numbers greater than 7
Multiples of 5
2
27
20
15

14. Andy has a bag that has

- 8 red tiles,
- 6 white tiles, and
- 3 blue tiles.

If he chooses one tile from the bag without looking, what color tile will he be LEAST LIKELY to pick? Explain how you know.

SA#: 14
Learning Results: I-1
Discrete Mathematics
I Students will understand and apply concepts in discrete mathematics. Students will be able to
1 create and use organized lists, tree diagrams, Venn diagrams, and networks.

SHORT-ANSWER SCORING GUIDE

Score	Description
2	Student correctly responds a blue tile AND explains this is because there are fewer blue tiles so it's the color least likely to be picked.
1	Student either correctly responds that the blue tile will least likely be picked without explaining why OR chooses a red or white tile, but gives an explanation indicating there are fewer blue tiles.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes for Short-Answer #14

Note: "Blue only has 3" is an acceptable explanation.

Student Responses for Short-Answer #14 for Score Points 2 and 1

14. **2**

Blue tiles because it has the least of it.

14. **2**

blue because there arent a lot of them

14. **1**

Andy has 3 blue tiles so he is most likly to get one of the 8 red tiles cause theres more red than blue

14. **1**

A blue tile because there are so many reds that they would be over lapping.

18. Dan made up a secret code in which A = 1, B = 2, C = 3, D = 4, and so on to Z = 26. Using Dan's secret code, what is the value of A + D + F?

A. 5

B. 6

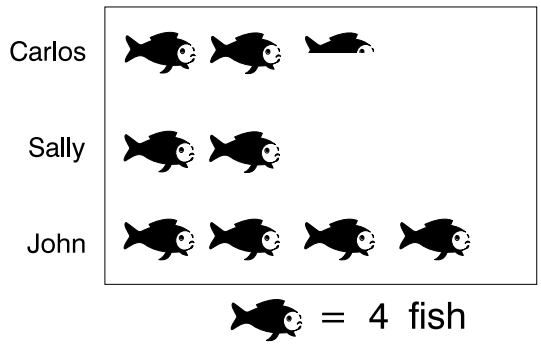
C. 10

D. 11

MC#: 18
Key: D
Learning Results: H-1
Algebra Concepts
H1 Students will understand and apply algebraic concepts. Students will be able to develop and evaluate simple formulas in problem-solving contexts.

19. The graph below shows how many fish each child has in his or her fish tank.

Number of Fish in Fish Tank



Together, how many fish do the three children have?

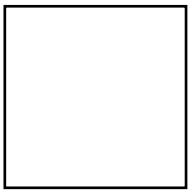
A. $8\frac{1}{2}$

B. 9

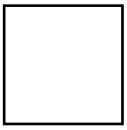
C. 32

D. 34

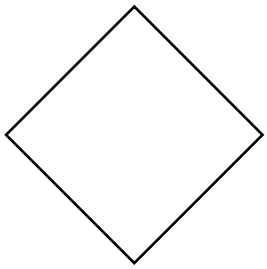
MC#: 19
Key: D
Learning Results: C-2
Data Analysis and Statistics
C 2 Students will understand and apply concepts of data analysis. Students will be able to read and interpret displays of data.

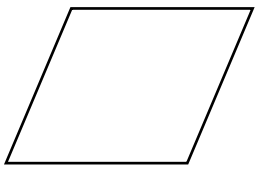


20. Which shape is congruent to the shape above?

A. 

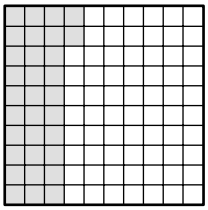
B. 

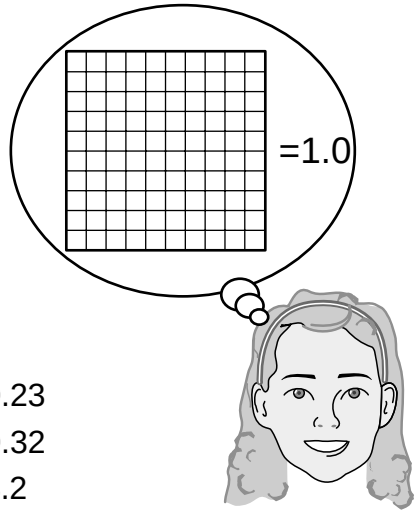
C. 

D. 

MC#: 20
Key: C
Learning Results: E-2
Geometry
E 2 Students will understand and apply concepts from geometry. Students will be able to experiment with shapes and figures to make generalizations regarding congruency, symmetry, and similarity.

21. What number does the shaded part of the square below represent?





A. 0.23
B. 0.32
C. 3.2
D. 30.2

MC#: 21
Key: B
Learning Results: A-3
Numbers and Number Sense
A Students will understand and demonstrate a sense of what numbers mean and how they are used. Students will be able to
3 demonstrate knowledge of the meaning of decimals and integers and an understanding of how they may be used.

22. Janet took a survey of her class. She asked each student how he or she gets to school. Her results are shown below.

How Students Get to School

Ride a Bike	𝍸
Take the Bus	𝍸 𝍸 ||
Go by Car	𝍸 |
Walk	||

According to her results, which statement below is NOT true?

A. More students go by car than take the bus.
B. More students ride a bike and walk than go by car.
C. More students take the bus than either walk or go by car.
D. More students ride a bike to school than walk.

MC#: 22
Key: A
Learning Results: C-1
Data Analysis and Statistics
C Students will understand and apply concepts of data analysis. Students will be able to
1 make generalizations and draw conclusions using various types of graphs, charts, and tables.

23. Make up a pattern that begins with these two numbers:

3, 6

a. Write the first 8 numbers in the pattern.

b. Write a rule for the pattern you wrote in part a.

c. Make up a DIFFERENT pattern that begins with the same two numbers, **3** and **6**. Write the first 8 numbers of this pattern.

d. Write the rule for the pattern you made in part c.

CR#: 23
Learning Results: G-1
Patterns, Relations, Functions
G Students will understand that mathematics is the science of patterns, relationships, and functions. Students will be able to
1 use the patterns of numbers, geometry, and a variety of graphs to solve a problem.

CONSTRUCTED-RESPONSE SCORING GUIDE

Score	Description
4	Student demonstrates a thorough understanding of patterns by extending a pattern in different ways and stating the rule for the extended patterns.
3	Student demonstrates a general understanding of patterns by extending a pattern in different ways and stating the rule for the extended patterns with only a minor error or omission.
2	Student demonstrates a basic understanding of patterns by correctly completing a significant portion of the required tasks.
1	Student demonstrates a minimal understanding of patterns.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes for Constructed-Response #23

Score	Description
4	Total points: 6
3	Total points: 5
2	Total points: 3 or 4
1	Total points: 2 or 1 OR Student shows minimal understanding of patterns.

Part a: 2 points a sufficient number of terms to show pattern beginning with 3, 6

OR 1 point work showing an attempt with a minor flaw

Part b: 1 point rule for pattern in Part a

Part c: 2 points a sufficient number of terms to show a different pattern beginning with 3, 6

OR 1 point work showing an attempt with a minor flaw

Part d: 1 point for rule for pattern in Part c

NOTES: If student has fewer than 8 terms in either Part a, Part c, or both, deduct a total of 1 point. If student has a correct pattern that begins with digits other than 3 and 6, consider it a minor flaw.

23.

4

B. The pattern has to go by 3.

A.

3	6	9	12	15	18	21	24				

D. The pattern has to go up 3, down 1, up 3, down 1, and so on

C.

3	6	5	8	7	10	9	12				

23.

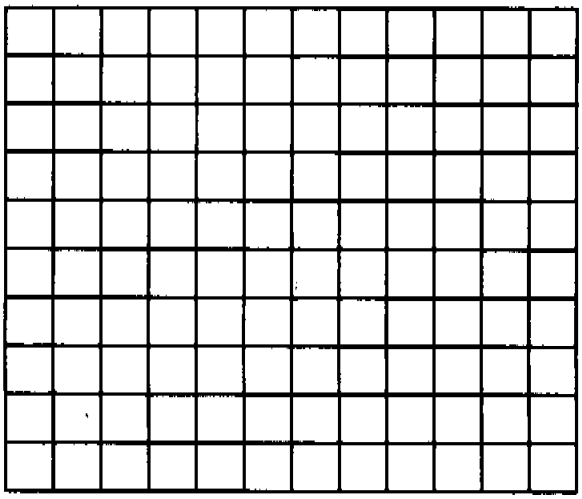
4

A 3, 6, 9, 12, 15, 18, 21, 24

B count by 3's

C 3, 6, 3, 6, 3, 6, 3, 6,

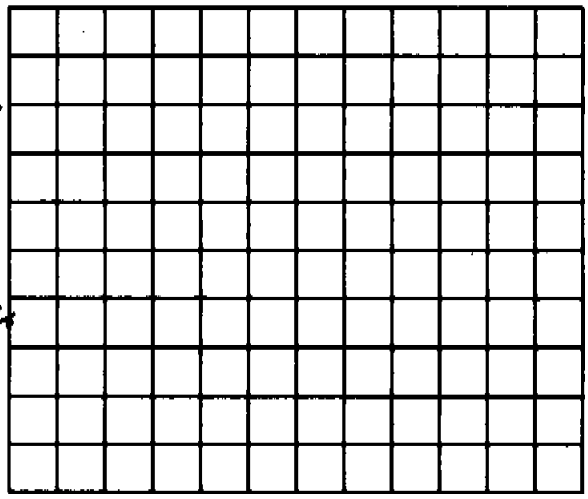
D keep repeting 3 and 6



23.

3

a. 3, 6, 9, 12, 15, 18, 21, 24.
B. add another 3 each time.
C. 3, 6, 10, 15, 21, 28, 36, 45.
D. start at 3, add another 3 then keep adding one number



23a.

3

The pattern is
3, 6, 9, 12, 15, 18, 21, 24.

b.

The rule is you have to add 3.

c.

The pattern is
3, 6, 12, 24, 48, 96, 192, 384.

d.

You have to multiply the number.

23.

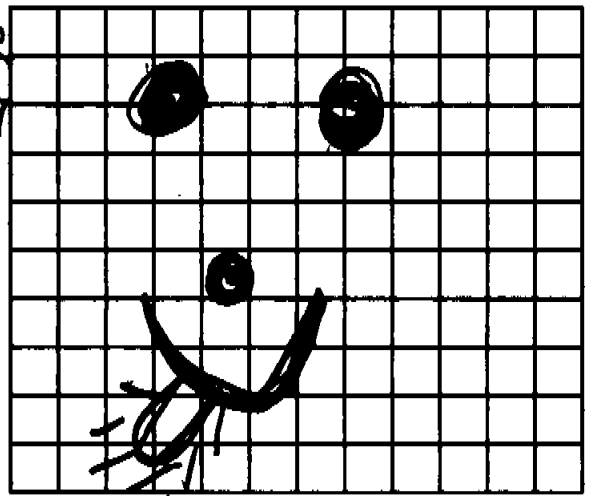
2

A. 3,6,9,12,15,18,21,24,27,30

D skip 3 every time

C 3,6,8,11,13,16,20,21

D. skip as many as you need.



23.

2

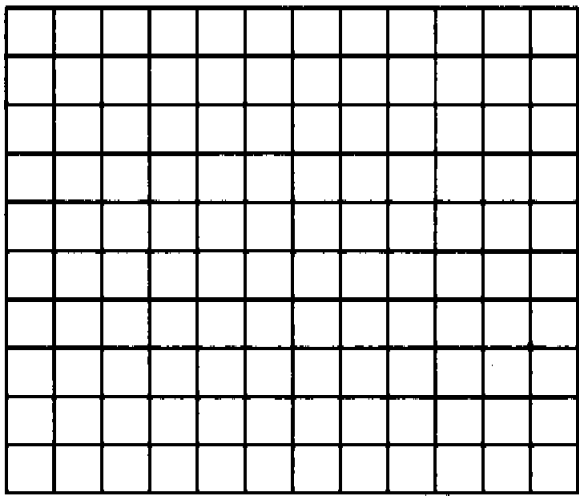
A. 3,6,9,12,15,18,21,22

B I counted by three's

C. 3,6,8,11,12,15,16,19

D. I counted by one's thandy

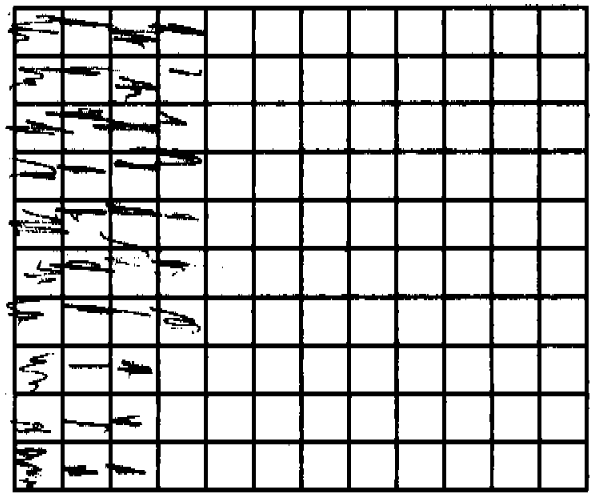
3.



23.

1

a) 3, 6, 5, 3, 6, 5, 3, 6,
b) It is Just a Pattern.
c) 3, 6, 7, 3, 6, 7, 3, 6,
I was Just linring abaut Pattern's in my head and they Just Pop out and I write them down. That all I hore I get a 4.

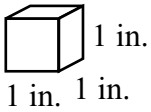


23.

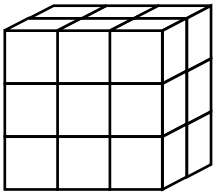
1

3	6	6	8	8	3	6	6	8	8	3	6
6	8	8	3	6	6	8	8	3	6	6	8
8	3	6	6	8	8	3	6	6	8	8	3
6	6	8	8	3	6	6	8	8	3	6	6
8	8	3	6	6	8	8	3	6	6	8	8
3	6	6	8	8	3	6	6	8	8	3	6
6	8	8	3	6	6	8	8	3	6	6	8
8	3	6	6	8	8	3	6	6	8	8	3
6	6	8	8	3	6	6	8	8	3	6	6
8	8	3	6	6	8	8	3	6	6	8	8

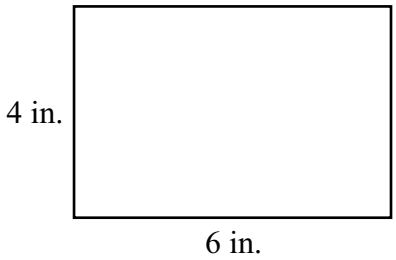
24. Mark has 100 1-inch cubes like the cube shown below.



a. How many of his cubes did he have to use to make the stack of cubes shown below?

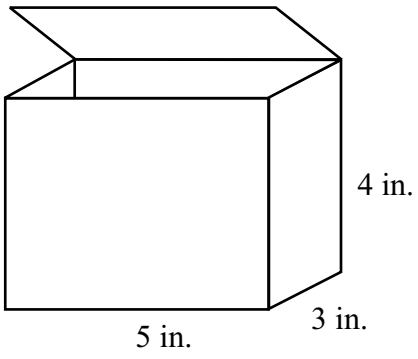


b. Mark has a rectangular tray with a top 6 inches long and 4 inches wide, as shown below.



What is the greatest number of his cubes he can put on his tray if he does not put any of them on top of others? Use words, pictures, or numbers to explain how you know your answer is correct.

c. What is the greatest number of the 1-inch cubes that Mark can fit into the box shown below at one time? Use words, pictures, or numbers to explain how you know your answer is correct.



CR#: 24
Learning Results: F-1
Measurement
F Students will understand and demonstrate measurement skills. Students will be able to
1 solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.

CONSTRUCTED-RESPONSE SCORING GUIDE

Score	Description
4	Student demonstrates a thorough understanding of the concepts of volume and area by correctly stating the number of cubes in a stack and correctly determining and explaining how many cubes will fit in a tray and box with given dimensions.
3	Student demonstrates a general understanding of the concept of volume and area by stating the number of cubes in a stack and determining and explaining how many cubes will fit in a tray and box with given dimensions with only a minor error or omission.
2	Student demonstrates a basic understanding of the concept of volume and area by correctly completing a significant portion of the required tasks.
1	Student demonstrates a minimal understanding of the concept of volume and area.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes for Constructed-Response #24

Score	Description
4	Total points: 5
3	Total points: 4
2	Total points: 2 or 3
1	Total points: 1

Part a	1 point	correct answer (18)
Part b	1 point	correct answer implicitly or explicitly stated (24)
AND	1 point	explanation showing correct strategy (e.g., 4 × 6, a picture or verbal description of 4 rows of 6 each)
Part c	1 point	correct answer (60)
AND	1 point	explanation showing correct strategy

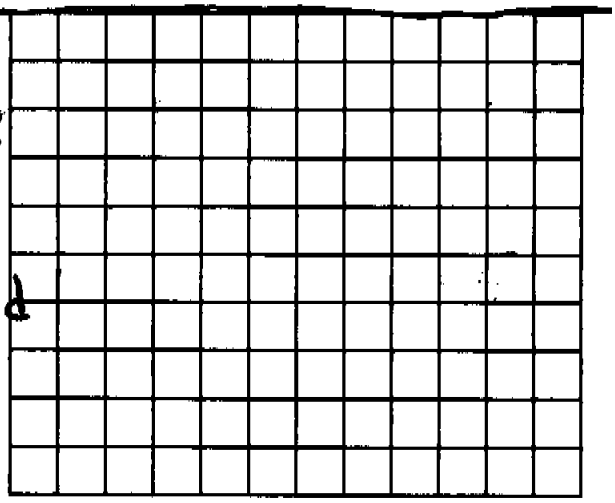
NOTE: In part c, do not penalize a student who takes the thickness of the box into account.

24. **4**

(A) 18 Cubes were used

(B) I multiplid 4x6 and got (24). I did that because I knew

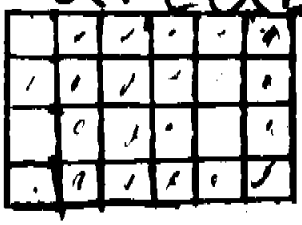
(C) I multiplid 4x3 and got 12. and then multipid 12x5 an got 60. he can fit 60 cubes in the box.



24. **4**

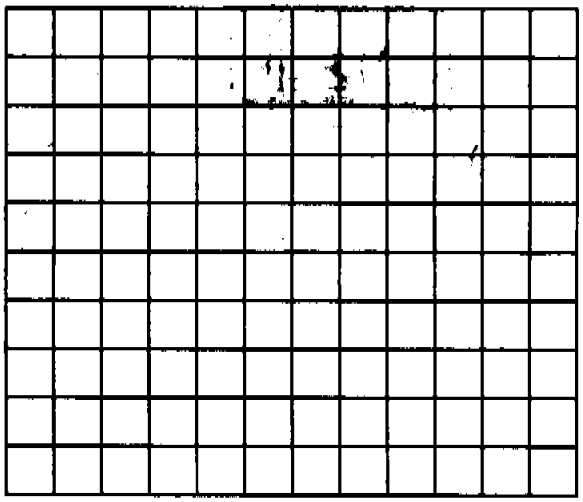
(A) 18 cubes

(B) 24 Cubes



60 cubes

(C) 4x3x5=60



24.

3

A. 100 cubes

B. $\times \overset{6}{4}$

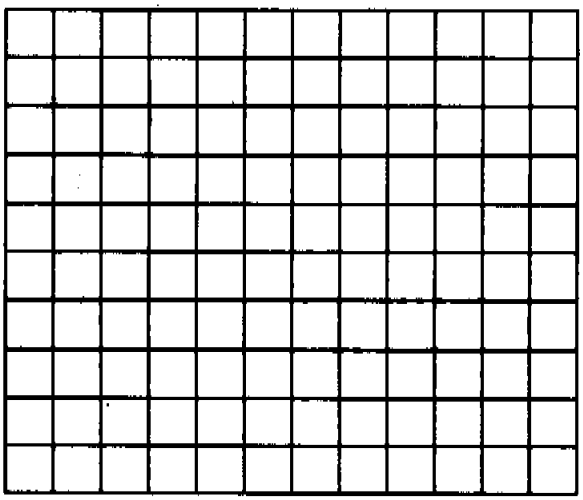
24 cubes

C. $\overset{9}{\times 6}$

20

$\times 3$

60 cubes in the box.



24.

3

A. 42 cubes

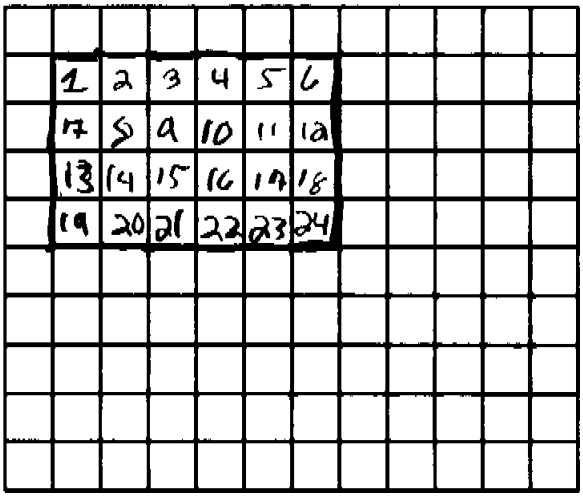
B. 24 1in cubes $6 \times 4 = 24$.

C. 60 1in cubes $\overset{5}{\times 4}$

20

$\times 3$

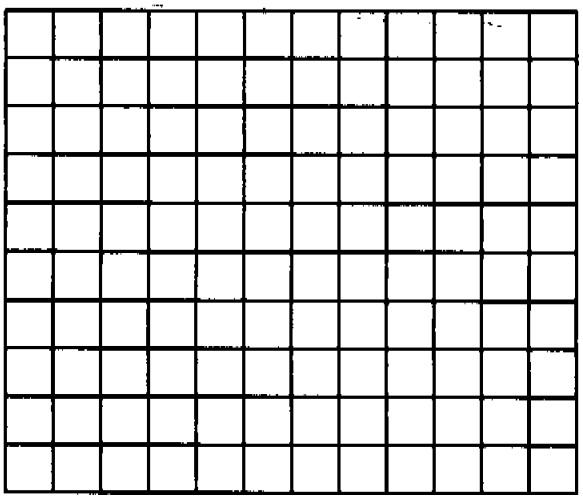
60



24.

2

He used 18
24
60



24.

2

A. Mark used 18 cubes to build his square

B.

25	17	13	9	5	1
22	18	14	10	6	2
23	19	15	11	7	3
24	20	16	12	8	4

Mark can use 24 squares

C.

Mark can use 24 cubes in his cube

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24

5 in

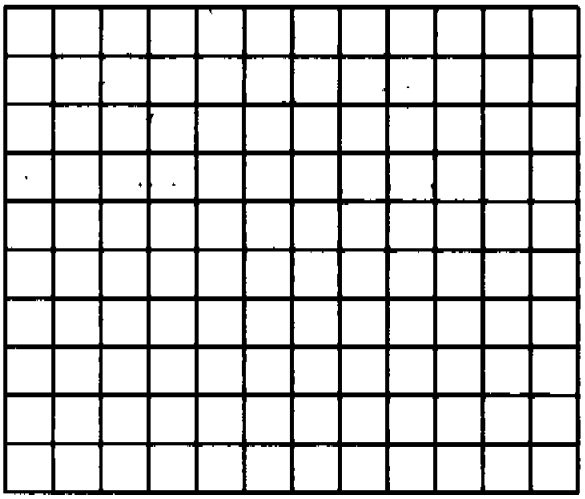
3 in

4 in

24.

1

He used 18 cubs to make his block

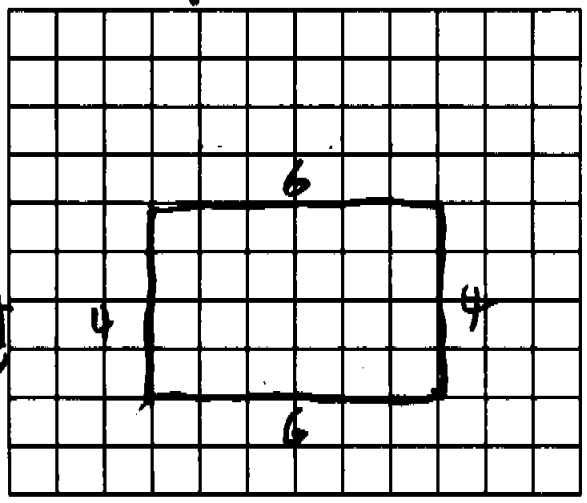


24.

1

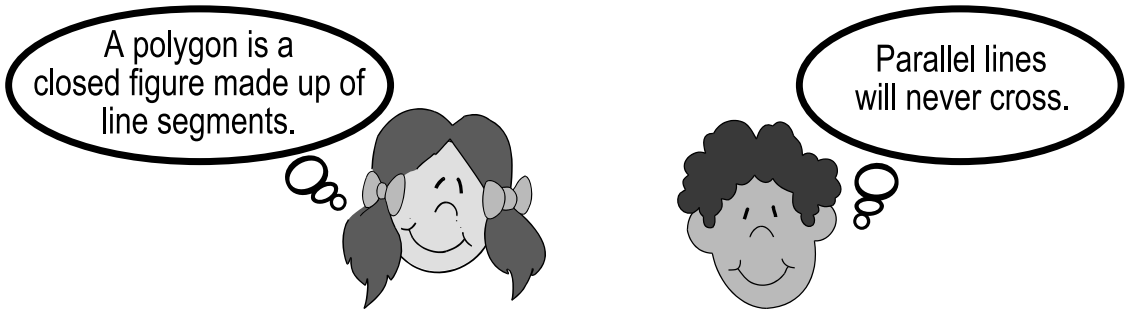
He had to use 18 of his cubes. could use 20 cubes.

I would say about 30 cubes could fit in his box. I don't know if my answer is correct but I just took a guess.



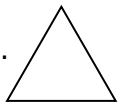
25. Think about the three groups of geometric figures described below and then answer the question parts.

Group 1:	Group 2:	Group 3:
Polygons	Figures with all sides of equal length	Figures with at least one set of parallel lines



a. This figure is a rectangle. 

Write the numbers of ALL the GROUPS—Group 1, Group 2, or Group 3—in which this rectangle belongs.

b. This figure is an equilateral triangle. 

Write the numbers of ALL the GROUPS in which this triangle belongs.

c. This figure is a trapezoid. 

Write the numbers of ALL the GROUPS in which this trapezoid belongs.

d. Name AND draw one figure that does NOT belong in any of the three groups.

e. Name AND draw one figure that belongs in ALL three groups.

CR#: 25
Learning Results: E-1
Geometry
E Students will understand and apply concepts from geometry. Students will be able to
1 describe, model, and classify shapes and figures using applicable properties.

CONSTRUCTED-RESPONSE SCORING GUIDE

Score	Description
4	Student demonstrates a thorough understanding of polygons and their properties by accurately classifying figures as polygons, as figures with sides of equal length, and as figures with a set of parallel sides.
3	Student demonstrates a general understanding of polygons and their properties by classifying figures as polygons, as figures with sides of equal length, and as figures with a set of parallel sides, with only minor errors or omissions.
2	Student demonstrates a basic understanding of polygons and their properties by correctly completing a significant portion of the required tasks.
1	Student demonstrates a minimal understanding of polygons and their properties.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes for Constructed-Response #25

Score	Description
4	Total points: 10
3	Total points: 7 to 9
2	Total points: 4 to 6 OR 3 points with at least one point from parts d or e
1	Total points: 1 to 3 OR Student shows minimal understanding of polygons and their properties.

Parts a, b, and c: 1 point for each correct group; subtract 1 point for each group incorrectly listed

Part a: Groups 1 and 3
Part b: Groups 1 and 2
Part c: Groups 1 and 3
Parts d and e: 2 points for naming and drawing an appropriate figure
OR 1 point for drawing **or** naming an appropriate figure

Part d: a circle or any other figure that is not a polygon, does not have sides of equal length, and does not have any parallel sides
Part e: a square, rhombus (diamond), hexagon, or octagon

Note:

- If a student draws a nongeometric figure in part d that meets the requirements, credit is given.
- In parts d and e, if the figure drawn does not match the name, and one is correct, award one point.

Student Examples for Constructed-Response #25 for Score Points 4, 3, 2, and 1.

25a. **4**

1, 3

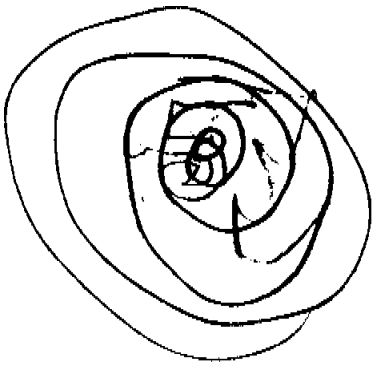
b.

1, 2

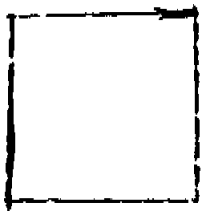
c.

1, 3

d.



e. Square



25a.

4

Group 1

Group 3

b.

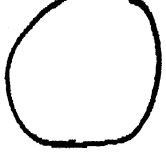
Group 1
Group 2

c.

group 1
group 3

d.

Circle



e.

Sqare

Group 1
Group 2
Group 3

25a. **3**

13

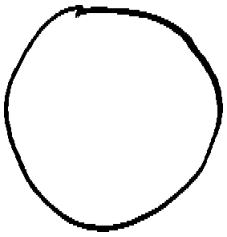
b.

12

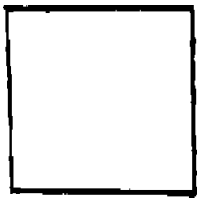
c.

13

d.



e.



25a.

Group 1
Group 3:

Figures with at least one set of parellel lines

3

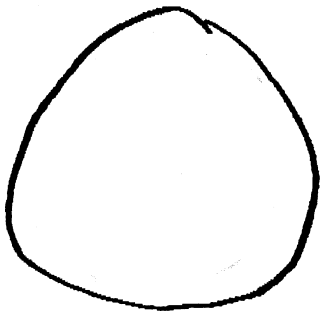
b.

Group 2:
Group 3:
Figure with all sides of equal length.

c.

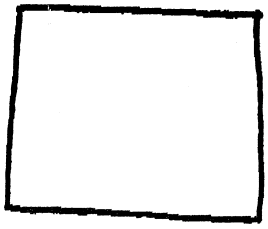
Group 3:
Figure with at least one set of parellel lines

d.



Because its a circle and its a round shape.

e.



A square has every thing.

25a. **2**

1

b.

2

c.

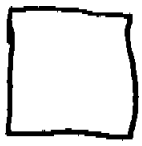
3

d.

Dimind

e.

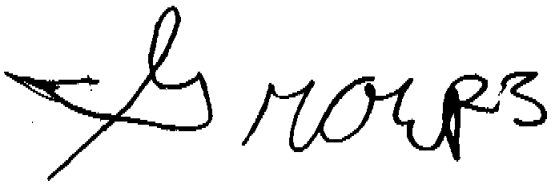
Squre



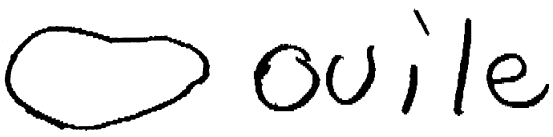
25a. **2**

b.

c.



d.



e.

25a. 1

group 1

b.

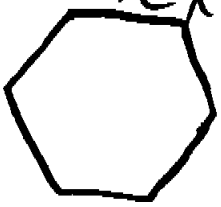
group 3

c.

group 2

d.

hexogone



e.

curcle

25a.

1

This rectangle belongs with groups 2. and 1

b.

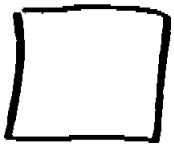
This Triangle belongs with groups 1 and 3.

c.

This trapezoid goes with all of the groups.

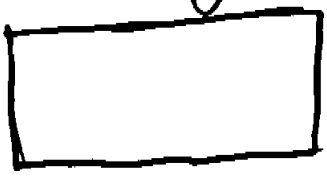
d.

Square

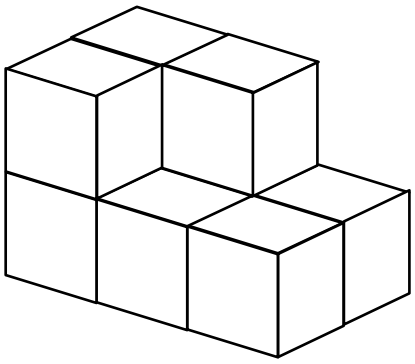


e.

Rectangle



26. How many blocks are in the stack below?



A. 6
B. 9
C. 12
D. 15

MC#: 26
Key: B
Learning Results: F-1
Measurement
F Students will understand and demonstrate measurement skills. Students will be able to
1 solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.

27. When Sharon was born her mother was 24 years old.

S stands for Sharon's age.

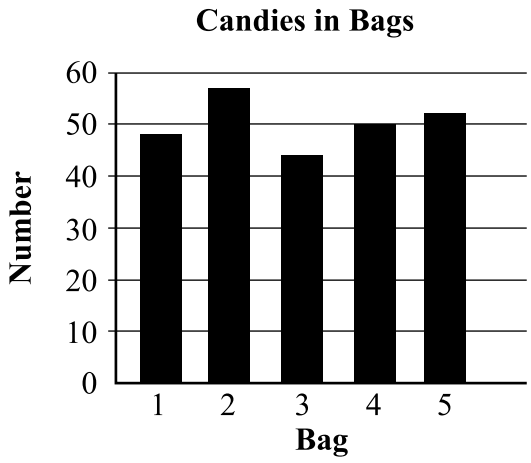
M stands for her mother's age.

Which number sentence is always true?

A. S + M = 24
B. M + S = 24
C. M + 24 = S
D. S + 24 = M

MC#: 27
Key: D
Learning Results: G-2
Patterns, Relations, Functions
G Students will understand that mathematics is the science of patterns, relationships, and functions. Students will be able to
2 use variables and open sentences to express relationships.

28. The graph below shows the number of candies in each of five bags.



The average number of candies in these bags is ABOUT

A. 40.
B. 50.
C. 55.
D. 60.

MC#: 28
Key: B
Learning Results: C-1
Data Analysis and Statistics
C Students will understand and apply concepts of data analysis. Students will be able to
1 make generalizations and draw conclusions using various types of graphs, charts, and tables.

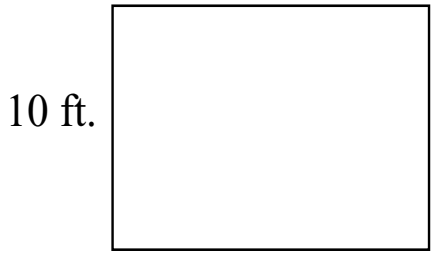
29. What number does ☐ stand for in the number sentence below?

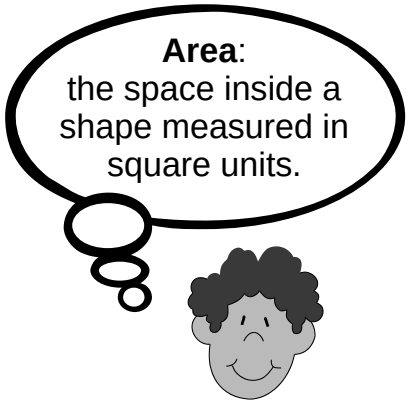
☐ × ☐ + 4 = 40

A. 3
B. 5
C. 6
D. 8

MC#: 29
Key: C
Learning Results: H-2
Algebra Concepts
H 2 Students will understand and apply algebraic concepts. Students will be able to find replacements for variables that make simple number sentences true.

30. Mrs. Anderson wants to buy carpet for the room shown below.





How much carpeting does she need to buy to cover the floor area?

A. 140 square feet
B. 92 square feet
C. 48 square feet
D. 24 square feet

MC#: 30
Key: A
Learning Results: F-1
Measurement
F Students will understand and demonstrate measurement skills. Students will be able to
1 solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.

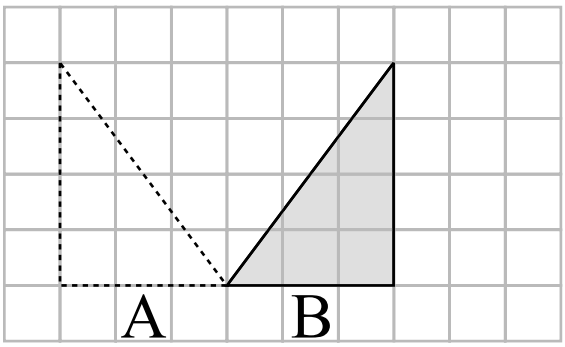
31. A bag has 5 marbles. Students took turns pulling a marble out of the bag, recording its color, and replacing it in the bag. The tally below shows the results.

Color	Number of times drawn
red	𝍸 𝍸 𝍸 ||
blue	𝍸 𝍸 𝍸 𝍸
green	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 ||||
yellow	𝍸 𝍸 𝍸 |||

Which are MOST LIKELY to be the colors of the 5 marbles in the bag?

A. 2 red, 1 blue, 1 green, and 1 yellow
B. 1 red, 2 blue, 1 green, and 1 yellow
C. 1 red, 1 blue, 2 green, and 1 yellow
D. 1 red, 1 blue, 1 green, and 2 yellow

MC#: 31
Key: C
Learning Results: D-2
Probability
D 2 Students will understand and apply concepts of probability. Students will be able to estimate probability from a sample of observed outcomes and simulations.



32. What motion was used to move the triangle from A to B?

A. a slide
B. a flip
C. a rotation (turn)
D. It was not moved by any of these motions.

MC#: 32
Key: B
Learning Results: E-3
Geometry
E 3 Students will understand and apply concepts from geometry. Students will be able to use transformations such as slides, flips, and rotations.

MONTH	BOOKS READ
September	750
October	1,347
November	1,431
December	687

33. Mrs. Larson, the principal, agreed to have a party if the students reached their goal of reading 5,000 books.

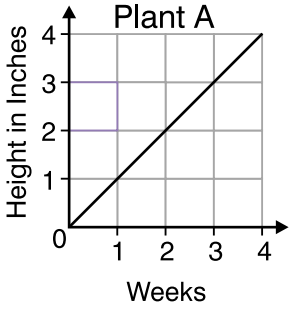
    How many more books will the students need to read to have the party?

    A. 785
    B. 1,785
    C. 3,215
    D. 4,215

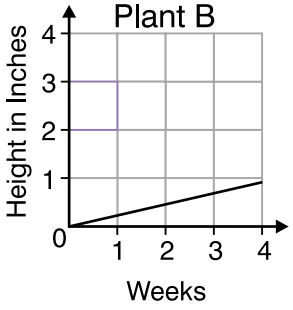
MC#: 33
Key: A
Learning Results: B-1
Computation
B 1 Students will understand and demonstrate computation skills. Students will be able to solve multi-step, real-life problems using the four operations with whole numbers.

34. Each graph below shows the growth of a different plant. Which graph represents the plant that grew the fastest?

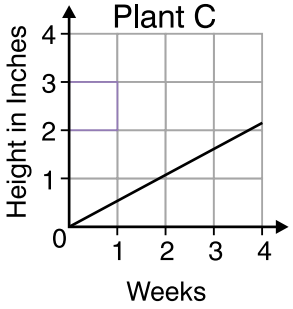
A.



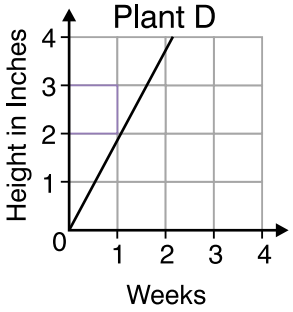
B.



C.

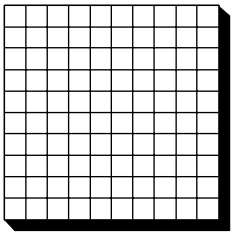
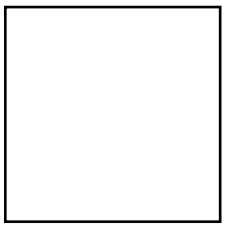


D.



MC#: 34
Key: D
Learning Results: C-1
Data Analysis and Statistics
C Students will understand and apply concepts of data analysis. Students will be able to
1 make generalizations and draw conclusions using various types of graphs, charts, and tables.

41. To answer this question, you will be drawing pictures of place value pieces.

- To show a hundreds piece,  , draw a piece like this: 

- To show a tens piece,  , draw a line like this:

- To show a ones piece, ❑, draw a large dot like this: ●

a. Draw place value pieces that show the number 462.

b. Draw place value pieces that show the number 307.

c. Imagine that you have hundreds pieces and ones pieces but no tens pieces. Draw place value pieces that show 513 without using any tens pieces.

d. Using hundreds, tens, and ones pieces, draw place value pieces to show THREE DIFFERENT WAYS to show 213.

CR#: 41
Learning Results: A-1
Numbers and Number Sense
A Students will understand and demonstrate a sense of what numbers mean and how they are used. Students will be able to
1 read, compare, order, classify, and explain whole numbers up to one million.

CONSTRUCTED-RESPONSE SCORING GUIDE

Score	Description
4	Student demonstrates a thorough understanding of place value concepts by pictorially representing different numbers and representing a given number in multiple ways.
3	Student demonstrates a general understanding of place value concepts by pictorially representing different numbers and representing a given number in multiple ways with only a minor error or omission.
2	Student demonstrates a basic understanding of place value concepts by correctly completing a significant portion of the required tasks.
1	Student demonstrates a minimal understanding of place value concepts.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes for Constructed-Response #41

Score	Description
4	Total points: 5
3	Total points: 4
2	Total points: 2–3
1	Total points: 1 OR Student shows minimal understanding of place value concepts.

Parts a–c:	1 point	each correct answer (representations of 462, 307, and 513 without tens)
Part d:	2 points	three different ways to represent 213
OR	1 point	two different ways

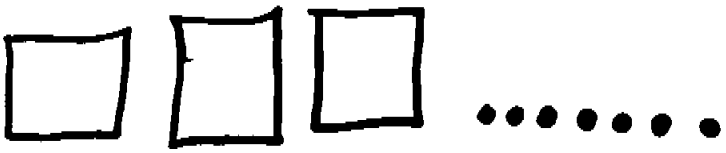
- 100 may be represented using 10 tens or 1 hundred; 10 may be represented by 1 ten or 10 ones.
- Any visual representation of ones, tens, and hundreds place value pieces is acceptable.
- Describing the pieces needed in words is acceptable, except for a 4-score.

Student Responses for Constructed-Response #41 for Score Points 4, 3, 2, and 1

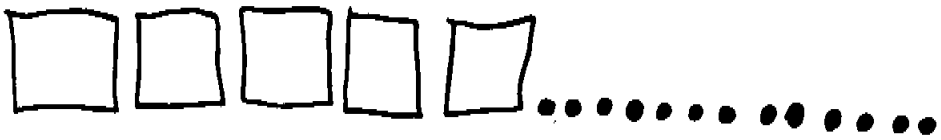
41a.

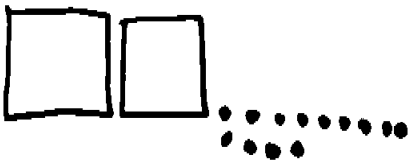
4

b.



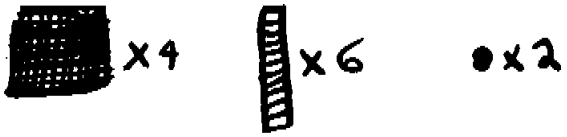
c.



d. First Way	Second Way	Third Way
		

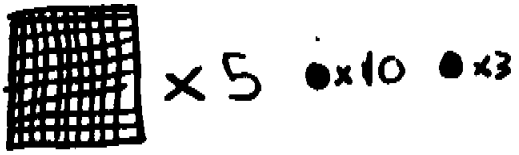
41a.

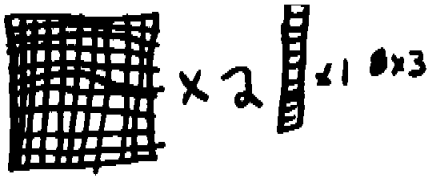
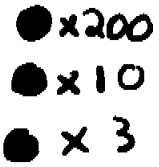
4



b.

c.

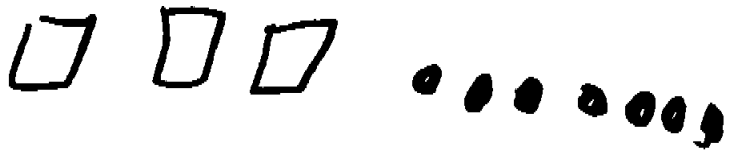


d. First Way	Second Way	Third Way
		

41a.

3

b.



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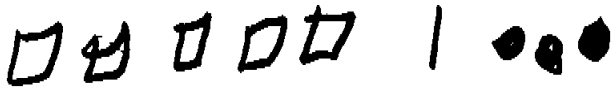
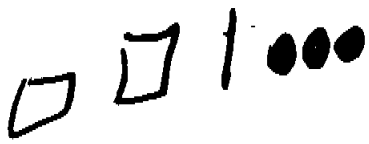
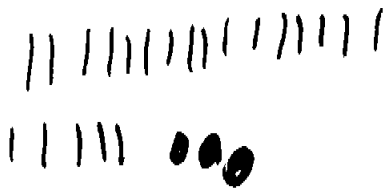
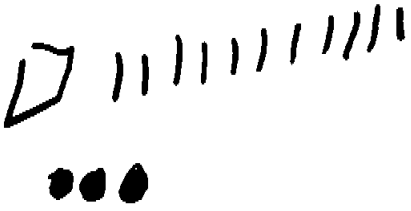
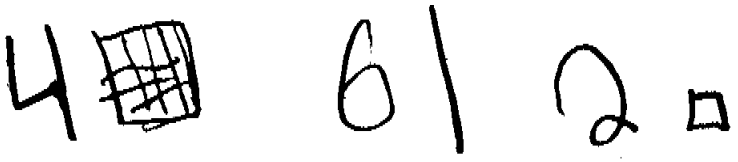


d. First Way	Second Way	Third Way
		

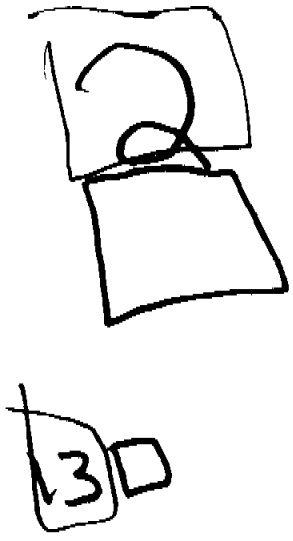
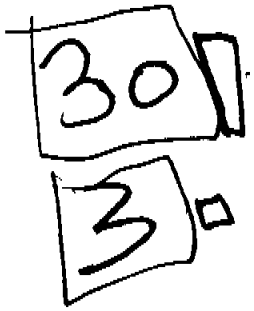
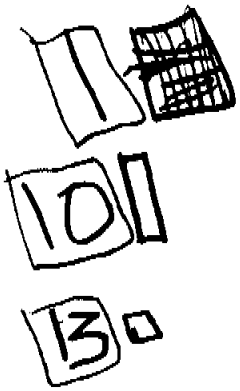
41a.

3

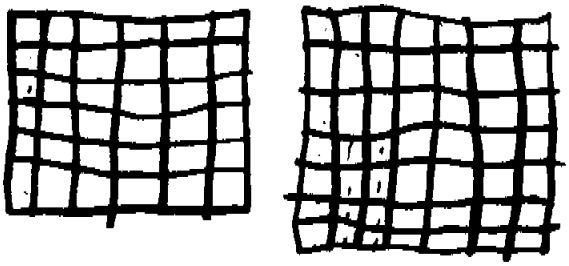


b.

c.

d. First Way	Second Way	Third Way
		

41a.



2

b.

I don't Know

c.

I use 5 hundreds and 13 ones

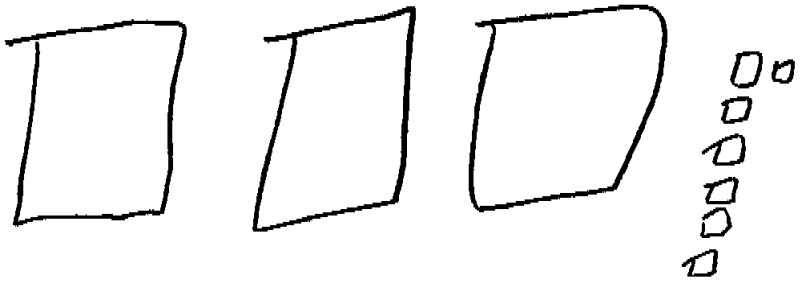
513

d. First Way	Second Way	Third Way
2 hundreds 1 ten's 3 ones	2 hundred 0 tens 13 ones	2 hundreds 13 tens 0 ones

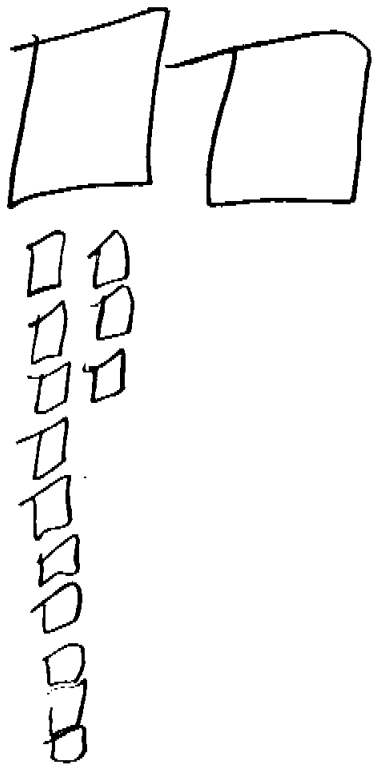
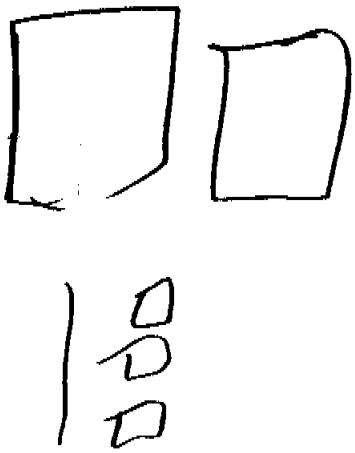
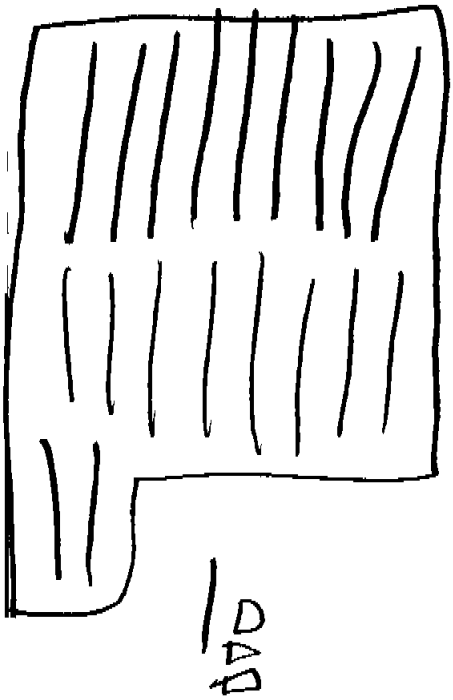
41a.

2

b.

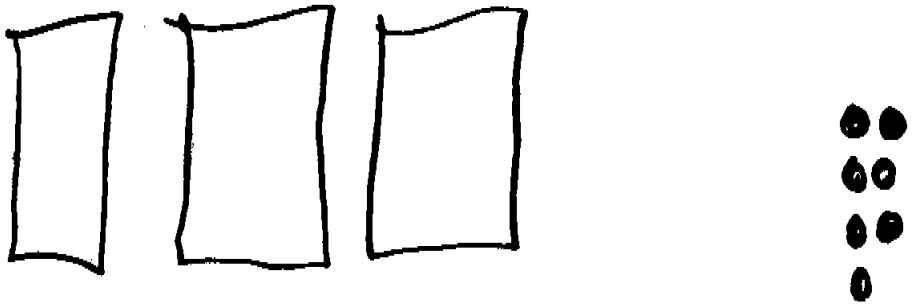


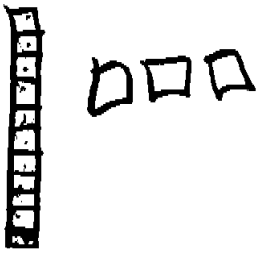
c.

d. First Way	Second Way	Third Way
		

41a. 

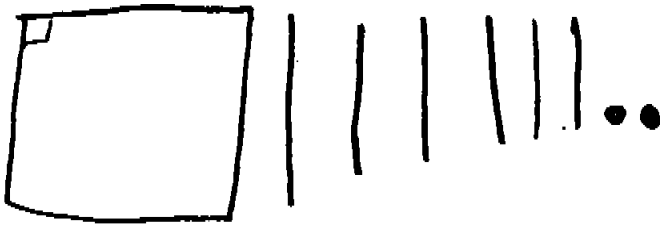
1

b. 

c. 

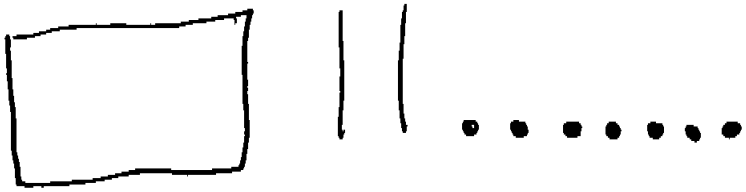
d. First Way	Second Way	Third Way
 132	213	123

41a.



1

b.



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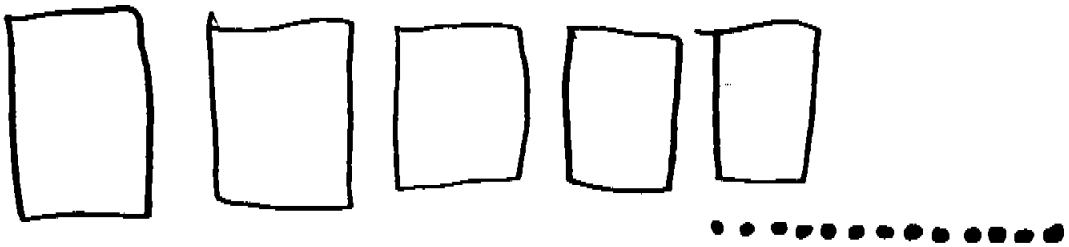

d. First Way	Second Way	Third Way